

Docket No.: 242926US0

IN THE UNITED STATES PATENT AND TRADEMARK OFFICEIN RE APPLICATION OF:  
Shigeru KURAMOTO, et al.

GROUP: 1742

SERIAL NO: 10/663,786

EXAMINER: ROE, J. R.

FILED September 17, 2003

FOR: TITANIUM ALLOY AND PROCESS FOR PRODUCING THE SAME

DECLARATION UNDER 37 C.F.R. § 1.132COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313

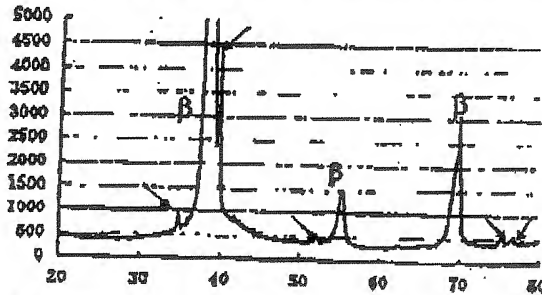
Sir:

Now comes Shigeru Kuramoto who deposes and states that:

1. I am a graduate of the University of Tokyo and received my Doctor of Engineering degree in the year 1994.
2. I have been employed by Toyota Central R & D Labs, Inc. for 5 years as a researcher in the field of materials science.
3. The following experiments were carried out by me or under my direct supervision and control.
4. A comparison of titanium alloys produced from the same raw materials, but heat treated below the  $\alpha+\beta/\beta$  transition temperature (top fig.), or above the  $\alpha+\beta/\beta$  transition temperature (bottom fig., invention), was performed. As shown by the figures below, the titanium alloys produced according to the invention do not contain  $\alpha$  phase identified by the arrow in the top figure.

## 5. Comparative Data:

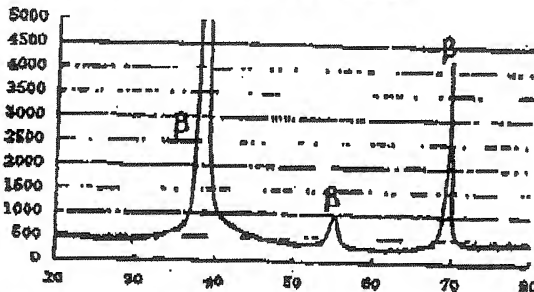
Ti-32%Nb-2%Ta-3%Zr-0.8%O (mass%)

The peaks from alpha phase are indicated by the arrows.  
900 degree C for 1 hour

sintering (1300 deg. C for 16 h), FC

↓  
hot forging (1050 deg. C), AC↓  
heat treatment (900 deg. C for 1h), WQThe  $\alpha+\beta/\beta$  transformation temperature is above 900 deg. The material is in the ( $\alpha+\beta$ ) two phase condition.

1050 degree C for 1 hour (solution treated)



sintering (1300 deg. C for 16 h), FC

↓  
hot forging (1050 deg. C), AC↓  
heat treatment (1050 deg. C for 1h), WQThe  $\alpha+\beta/\beta$  transformation temperature is below 1050 deg. The material is in the  $\beta$  single phase condition.

After a solution treatment, the material is in a single phase condition. So the heat treatment at 1050 deg. C is a solution treatment, but the one at 900 deg. C is not.  
[FC: furnace cooling; AC: air cooling, WQ: water quenching]

6. The undersigned petitioner declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

7. Further deponent saith not.

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22850

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(OSM&N 05/06)

Signature

Shigero Furumoto

Date

Sept. 18 2007